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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 18, 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim element in claims 18, 23 are directed to a means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. However, the written description fails to clearly link or associate the disclosed structure, material, or acts to the claimed function such that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it clearly links or associates the corresponding structure, material, or acts to the claimed function without introducing any new matter (35 U.S.C. 132(a)); or

(c) State on the record where the corresponding structure, material, or acts are set forth in the written description of the specification that perform the claimed function. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o) and 2181.

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That is claims 18, 19, and 23 recite, --a means plus function-- limitation. Applicant does not identify the claimed means.

Dependent claims 12-31, 34-44 are rejected for depending on a rejected base claim and for also having the same deficiency as the rejected base claim.

The rest of the claims are rejected for depending on a rejected base claim.

Claim 15 calls for acquiring "a second height value", it is unclear what object's is being acquired.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 15, 23, 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 15, 23, 30 each recite " acquiring a second height value using variables from the two dimensional polynomial; and

comparing the a difference between the second height value and the altitude to a predetermined threshold".

This is new matter since the disclosure does not show support of possession of the claimed limitations in the original disclosure.

*Drawings*

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

Therefore, the claimed structural element of each recited “means” in claims 18 and 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Applicant points to receiver 120 and server 250, but there is no support in the specification or drawing linking the structures to the recited means.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10, 15-18, 23-25, 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over P. Ptasinski et al (Jounal of Navigation, 2002, chapter 55, pages 451-462) and further in view of Geier (5202829).

Regarding claim 10, Ptasinski et al disclose a method of determining the location of a receiver (figs. 3&4) in recipient of at least three positioning signals, comprising:

identifying a reference location (pages 452-456) with the at least three positioning signals;

determining a height value associated with the reference location (figs. 1&2; pages 452-456);

deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

solving the at least three simultaneous equations (pages 452-456) with the height value value that results in a position and a corresponding horizontal error ellipse (figs. 1, 2);

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (figs. 1&2); and

solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 453-456).

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P. Ptasinski et al (Jounal of Navigation) recite an ellipse as shown above but did not particularly mentioned that it was centered at the position derived from solving satellite positioning signals. However, Geier (figs. 1-3& 14) teaches of a method of determining the location of a receiver (e.g. ship, tail buoy, fig. 14) in recipient of at least three positioning signals, comprising:

deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with the height value that results in a position and a corresponding horizontal error ellipse that is centered at the position and has major and minor axes extending in latitude and longitude directions through the position;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse, the two dimensions corresponding to the latitude and longitude directions (Geier, abstract, col. 5, lines 67 to col. 6, lines 30; col. 13, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify P. Ptasinski for the purpose of providing an improved positioning system for ships linked to tail buoys (fig. 14).

*The above reference, Geier had been previously submitted to applicant.*

Regarding claim 15, Ptasinski et al in view if Geier disclose the method of claim 10, further include: acquiring another height using variables from the two dimensional polynomial; and comparing the difference between the other height and altitude to a predetermined threshold (pages 453-456).

Regarding claim 16, Ptasinski et al disclose the method of claim 15, where the predetermined threshold is 100 meters (pages 453-456).

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Regarding claim 17, Ptasinski et al disclose the method of claim 10, where the receiver is located in a server (pages 453-456).

Regarding claim 18, Ptasinski et al disclose the satellite positioning receiver apparatus (figs. 3&4) in recipient of at least three positioning signals, comprising:

means for identifying a reference location (pages 452-456) with the at least three positioning signals;

means for determining a height value associated with the reference location (figs. 1&2; pages 452-453);

means for deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

means for solving the at least three simultaneous equations (pages 452-456) with the height value that results in a position and a corresponding horizontal error ellipse (figs. 1, 2);

means for fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (figs. 1&2); and

means for solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 453-456).

P. Ptasinski et al (Jounal of Navigation) recite an ellipse as shown above but did not particularly mentioned that it was centered at the position derived from solving satellite positioning signals. However, Geier (figs. 1-3& 14) teaches of a method of determining the location of a receiver (e.g. ship, tail buoy, fig. 14) in recipient of at least three positioning signals, comprising:

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deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with the height value that results in a position and a corresponding horizontal error ellipse that is centered at the position and has major and minor axes extending in latitude and longitude directions through the position;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse, the two dimensions corresponding to the latitude and longitude directions (Geier, abstract, col. 5, lines 67 to col. 6, lines 30; col. 13, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify P. Ptasinski for the purpose of providing an improved positioning system for ships linked to tail buoys (fig. 14).

Regarding claim 23, Ptasinski et al disclose the apparatus of claim 18, further including:

means for acquiring another height using variables from the two dimensional polynomial; and means for comparing the difference between the other height and altitude to a predetermined threshold (pages 452-456).

Regarding claim 24, Ptasinski et al disclose the apparatus of claim 23, where the predetermined threshold is 100 meters (pages 452-456).

Regarding claim 25, Ptasinski et al disclose a machine-readable signal bearing medium (figs. 3&4) for satellite positioning receiver apparatus containing a plurality of machine-readable signals, comprising:

identifying a reference location (pages 452-456) with the at least three positioning signals;

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determining a height value associated with the reference location (figs. 1&2; pages 452-453);

deriving at least three simultaneous equations associated with the at least three positioning signals (pages 452-456);

solving the at least three simultaneous equations (pages 452-456) with the height value that results in a position and a corresponding horizontal error ellipse (figs. 1, 2);

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse (figs. 1&2); and

solving the at least three simultaneous equations and the two dimensional polynomial that results in an altitude of the satellite positioning receiver (pages 453-456).

P. Ptasinski et al (Jounal of Navigation) recite an ellipse as shown above but did not particularly mentioned that it was centered at the position derived from solving satellite positioning signals. However, Geier (figs. 1-3& 14) teaches of a method of determining the location of a receiver (e.g. ship, tail buoy, fig. 14) in recipient of at least three positioning signals, comprising:

deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with the height value that results in a position and a corresponding horizontal error ellipse that is centered at the position and has major and minor axes extending in latitude and longitude directions through the position;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse, the two dimensions corresponding to the latitude and longitude directions (Geier, abstract, col. 5,

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lines 67 to col. 6, lines 30; col. 13, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify P. Ptasinski for the purpose of providing an improved positioning system for ships linked to tail buoys (fig. 14).

Regarding claim 30, Ptasinski et al disclose the machine-readable signal bearing medium of claim 25, further including:

means for acquiring another height using variables from the two dimensional polynomial (pages 452-456); and

means for comparing the difference between the other height and altitude to a predetermined threshold (pages 452-456).

Regarding claim 31, Ptasinski et al disclose the machine-readable signal bearing medium of claim 30, where the predetermined threshold is 100 meters (pages 452-456).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over P. Ptasinski et al (Journal of Navigation, 2002, chapter 55, pages 451-462) in view of Hancock (6202023) and further in view of Geier (.

Regarding claim 34, Ptasinski et al disclose a server (fig. 4), comprising:

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a transceiver (figs. 3&4) that receives a plurality of satellite code phases (pages 454-457);

a memory (figs. 3&4) with digital terrain elevation data (pages 454-457); and

a controller (figs. 3&4) that processes the plurality of code phases and accesses the digital terrain data in memory with an initial height value to determine a location indicated by the plurality of satellite codes and the digital terrain data (pages 454-457);

a message containing the location data sent from the transceiver;

a horizontal error ellipse parameter (figs. 1&2) in an altitude equation that form an error ellipse having a major axis and a minor axis that corresponds to an altitude error about the initial height value (pages 452-456); and

a plurality of points along the major axis and the minor axis that form a grid of grid points that the controller accesses the digital terrain elevation data in memory at the grid points (pages 452-457).

Ptasinski disclose the points along the major axis and the minor axis, but was no quite clear about a polynomial surface fit over the points. However, Hancock teaches of a two dimensional polynomial surface fit over a grid of points (Figs. 1, 2; cols. 6, etc).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ptasinski for the purpose of allowing faster database searches of position (col. 4, lines 1+).

Further P. Ptasinski et al (Jounal of Navigation) and Hancock recite an ellipse as shown above but did not particularly mentioned that it was centered at the position derived from solving satellite positioning signals. However, Geier (figs. 1-3& 14) teaches of a method of determining

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the location of a receiver (e.g. ship, tail buoy, fig. 14) in recipient of at least three positioning signals, comprising:

deriving at least three simultaneous equations associated with the at least three positioning signals;

solving the at least three simultaneous equations with the height value that results in a position and a corresponding horizontal error ellipse that is centered at the position and has major and minor axes extending in latitude and longitude directions through the position;

fitting a two-dimensional polynomial to the corresponding horizontal error ellipse, the two dimensions corresponding to the latitude and longitude directions (Geier, abstract, col. 5, lines 67 to col. 6, lines 30; col. 13, lines 34-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify P. Ptasinski and Hancock for the purpose of providing an improved positioning system for ships linked to tail buoys (fig. 14).

### ***Response to Arguments***

10. Applicant's arguments filed 3/8/11 have been fully considered but they are all not persuasive.

Further claims 18 and 23 recite, --a means plus function-- limitation. Applicant does not identify the claimed means. Applicant argues that MPEP does not require him to disclose the structure referred to the means that does the function. The examiner disagrees. That is Claim element in claims 18, 19, 23 are directed to a means (or step) plus function limitation that

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invokes 35 U.S.C. 112, sixth paragraph. However, the written description fails to clearly link or associate the disclosed structure, material, or acts to the claimed function such that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it clearly links or associates the corresponding structure, material, or acts to the claimed function without introducing any new matter (35 U.S.C. 132(a)); or

(c) State on the record where the corresponding structure, material, or acts are set forth in the written description of the specification that perform the claimed function. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o) and 2181.

Applicant's explanation about the structure corresponding to the claimed, "means" is not convincing since there is no link between applicant's cited structure and the claimed, "means".

Applicant's further arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection based on newly found art.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Communication***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONNIE MANCHO whose telephone number is (571)272-6984. The examiner can normally be reached on Mon-Thurs: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Khoi can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ronnie Mancho/  
Examiner, Art Unit 3664

/Ronnie Mancho/  
Primary Examiner, Art Unit 3664

5/23/11